

EXCEPTION TO THE RULE:
CAN TEST ADMINISTRATORS PREVENT STEREOTYPE THREAT?

By

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To all who nurtured my faith, dreams, and scholarship

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Negative stereotypes about intellectual abilities can produce a threat that upsets the performance of stigmatized groups, such as women in mathematics and students of color in academic domains, a phenomenon called stereotype threat. There is empirical evidence that supports stereotype threat and reveals that priming negative stereotypes lead to lower intellectual performance in stigmatized group members. This study explores factors that can prevent stereotype threat. Specifically, the study examines whether stereotype threat can be prevented when an African-American role model administers a test to African-American students. Portions of a standardized achievement test were administered to European-American and African-American college students to determine the impact of test administrators on standardized test performance. Test administrators were found not to impact test performance or reduce stereotype threat.

CHAPTER 1 INTRODUCTION

The disparity in school achievement and standardized test performance among racial and ethnic groups is extensively documented. These gaps in school achievement and standardized test performance have been sizeable and persistent. The disturbing trend that European-Americans perform better than African-American and Latino students from primary school through college is demonstrated across various measures of academic success, such as test scores, grades, dropout rates, and college matriculation rates (Aronson, 2002). The Scholastic Aptitude Test (SAT) mean verbal and math scores are 434 and 429 for African-Americans; 454 and 465 for Mexican Americans; 459 and 456 for Puerto Ricans; 458 and 463 for other Hispanics; 527 and 536 for European-Americans, respectively (Sathy, Barbuti, & Mattern, 2006). Yet, standardized tests are used to make educational decisions that have great implications for one's life. Standardized tests, such as the SAT and Graduate Record Exam (GRE) are used for admission decisions and determining scholarship eligibility in higher education. The No Child Left Behind Act has increased the value and frequency of standard testing in public schools. Across many states, high school students will be required to pass a standardized test to graduate. The importance of standardized test scores has led to great concern about group differences in performance.

The correlation of level of education with income and quality of life has consistently been demonstrated (Kozol, 1991). Lower test scores on standardized test hinders acceptance to many postsecondary institutions, reducing the number of high school graduates of color matriculating into universities. There is substantial evidence that students of color score lower on standardized tests than European-Americans and females perform lower than males on quantitative portions of standardized tests (Aronson, Quinn, & Spencer, 1998). Moreover, there is substantial evidence

that students of color score lower on the GRE, which is a test that determines admission to graduate programs. Thus, scores on the GRE may be a major contribution to the significant underrepresentation of students of color in doctoral programs and professional schools (e.g., medical and veterinary). Specifically, the Educational Testing Service (2003) documented the GRE verbal mean score of 394 and GRE quantitative mean score of 425 for African-Americans, 428 and 483 for Mexican Americans, 408 and 478 for Puerto Ricans, 441 and 499 for other Hispanics, and 494 and 556 for European-Americans, respectively. Thus, reducing the racial disparity among standardized test performance will increase access to postsecondary education for students of color and increase the likelihood of higher income, given that income is correlated to high salaries (Kozol, 1991) and quality of life.

Researchers have examined various explanations for the discrepancy in standardized test scores across various ethnic groups that range from environmental factors, such as socioeconomic disadvantage (McKay, Doverspike, Bowen-Hilton, & McKay, 2003) to individual factors, such as genetics (Osborne, 2001). The most notorious and heavily disputed explanation has been based on the premise that some ethnic groups are intellectually inferior by nature. Herrnstein and Murray (1994) in their controversial book, *The Bell Curve*, argued that there are genetically determined differences in intellectual ability that are demonstrated by the persistent gap in test scores and school achievement. Many reject the notion of group intellectual inferiority and acknowledge that a combination of sociocultural factors (e.g., poor schooling, poverty, parental education level, etc.) hinders African-American and Latino students from optimally achieving in schools (Nieto, 2004). Historically, students of color have been denied economic and educational resources, subsequently leading to underperformance in certain academic domains (Kozol, 2001).

Socialization differences among ethnic groups have also been proposed as exacerbating the achievement gap. Ogbu (1978) argues that certain students of color underperform academically because there is a mismatch between school and home culture. Certain students of color that experience continuous, systemic discrimination perceive schooling as providing unequal educational opportunities and do not endorse certain dominant group behaviors that tend to facilitate academic achievement, prohibiting them from optimally performing in academic settings. Specifically, Ogbu purports that African-Americans that are “involuntary minorities,” American citizens as a result of enslavement, do not subscribe to White middleclass values such as education (1987). Consequently, the academic failure of African-American students can be interpreted as reactionary behavior toward the dominant culture because they equate school success with losing their own cultural identity. Despite various established theories, the persistent gap in standardized test scores has driven research that further explores factors that impair the test performance of students of color.

Research suggests that negative stereotypes can impair test performance (Demo & Parker, 1987). Negative stereotypes about members of historically stigmatized groups continue to exist despite a social and legal climate that explicitly discourages expressions of prejudice and racism (Wittenbrink, Judd, & Park, 1997). Steele and his colleagues (Steele, 1997; Steele & Aronson, 1995, 1998; Spencer, Steele, & Quinn 1999) have identified the phenomenon of stereotype threat which purports that cognitive performance is impaired as a result of pressure that one will confirm a negative stereotype about a group to which one belongs. Specifically, stereotype threat is defined as “the event of a negative stereotype about a group to which one belongs becoming self-relevant, usually as a plausible interpretation for something one is doing, for an experience one is having, or for a situation one is in, that has relevance to one’s self-definition”

(Steele, 1997, p.617). It is important to note that the definition emphasizes that a stereotype must be self-relevant, pertaining to a characteristic that is essential to one's identity, to be threatening. Stereotype threat is a situational threat that depends heavily on the person's connection with the stereotype-relevant domain, such as academics. For students in which academic achievement is a major component of their identity, a negative stereotype regarding intellectual inferiority is threatening because it pertains to a domain that is personally meaningful.

For stereotype threat to occur a person must strongly identify with the respective group and the task must be from a domain that the person can identify with. For example, Shih, Pittinsky, and Ambady (1999) found that performance on a math test depended on the social identity (Asian or female) that was made salient to students by presenting various ethnic or gender stereotypes. Aligning with the stereotypes, activating ethnicity improved performance, while activating gender impaired performance. In a similar study, Hispanic American females significantly underperformed European-American females and Hispanic American males on a math test when described as diagnostic of intellectual ability (Gonzales, Blanton, & Williams, 2002). The authors purport that the stereotype threat effects result from the double-minority status of Hispanic females. Many students encompass a "cultural self" (Markus & Kitayama, 1995), which can serve as a level of interdependence with others of their race and gender. This interdependence can lead to the perceived responsibility to help their culture thrive. When faced with a stereotype, even if the person believes it is false, the cultural self can foster an intense need to dispel the stereotype and activate the awareness that an individual's poor performance can be generalized to one's group (Cohen & Garcia, 2005). Those who belong to a group with a negative stereotype about their intellectual performance fear failure and embarrassment, as well

as confirming the negative stereotype. The combination of these factors makes it likely that academic performance will be negatively affected in threatened groups.

Negative stereotypes that allege the intellectual inferiority of African-American and Latino students are especially hazardous because stereotypes are well known and intelligence is universally valued. In schools there is often a climate of stereotype awareness that can provoke African-American and Latino students to feel suspicious, to fear confirming negative stereotypes, and to question if they belong in environments of academic domain (Aronson, 2002). Thus, students' reactions to stereotyping can have a significant impact on their academic performance (Steele, 1997; Steele & Aronson, 1995, 1998; Spencer, Steele, & Quinn 1999).

Steele and Aronson (1995) demonstrated that telling African-American and European-American undergraduates that a test made up of difficult items from the GRE that were evaluative of their intellectual ability depressed the test performance of African-American students. In contrast, when African-Americans and European-Americans were instructed that the test was non-evaluative the difference in test scores between groups diminished. Even in non-evaluative testing conditions race was a salient factor. In another study, African-American students performed significantly lower than European-American student when they were merely asked to indicate their race on a demographic survey prior to beginning the test. Therefore, Steele and Aronson (1995) demonstrated that simply requiring a student to indicate their race can trigger a defense of one's academic competence by activating a stereotype about that specific racial group's intellectual abilities.

Stereotype threat can also pertain to stereotypes regarding gender, socioeconomic status, and age. Stereotype threat has been found in women in male-dominated domains such as math or science (Spencer et al., 1999). Male and female undergraduates with majors that required

strong math abilities were administered difficult items of the quantitative portion of the GRE. When participants were instructed that the test was evaluative of their math abilities, female students performed significantly lower. In contrast, when participants were instructed that the test was non-evaluative of their math abilities female students performed just as well as their male counterparts. The effect of stereotype threat on women's math performance has been replicated in numerous studies (e.g., Inzlicht & Ben-Zeev, 2000; Keller & Dauenheimer, 2003; O'Brien & Crandall, 2003; Sekaquaptewa & Tompson, 2003).

Similarly, Hess and colleagues (2003) demonstrated stereotype threat effects with elderly individuals when stereotypes alleging a decline in mental abilities in the elderly were discussed in the description of the task. Specifically, elderly participants performed worse on a measure of short-term memory when prompted with stereotypes regarding senility and age than when they were prompted with stereotypes regarding age and wisdom. Moreover, there is empirical evidence that stereotypes regarding intellectual inferiority can have an additive effect on academic performance.

There is also evidence that a person does not have to be a member of a stigmatized minority group to succumb to the pressures of stereotype threat. European-American male undergraduates who majored in math were administered a difficult math test and in certain conditions they were instructed that the purpose of the study was to determine why Asian males perform better on that specific measure. When prompted with the stereotype of Asian mathematical superiority, participants solved fewer problems and reported lower self-confidence (Aronson et al., 1999). In addition, European-Americans performed significantly lower than African-Americans on a motor task when described as measuring natural athletic ability (Stone, Lynch, Sjomeling, & Darley, 1999). Therefore, anyone who identifies with a group that is

targeted by a stereotype regarding superiority of a comparable group can experience stereotype threat.

Mediating Variables of Stereotype Threat

Numerous studies have demonstrated the effects of stereotype threat. However, the underlying processes or mediating variables of stereotype threat that impairs performance is still unclear. Researchers have examined various mediating processes of stereotype threat including anxiety, reduction in working memory capacity, evaluation apprehension, and effort.

Anxiety

Anxiety is one of the first mechanisms proposed as a mediator of stereotype threat (Steele & Aronson, 1995). It is hypothesized that anxiety can stem from not only the rigor of the test but also from the pursuit of disproving the negative stereotype, which could be considered a social goal. Most students in completing an intellectual activity do not just see the task as an academic goal, but attach social goals to the task as well (Urdan & Maehr, 1995). The pursuit of multiple goals then increases the student's anxiety to such a level that it impairs his or her performance. With anxiety's ability to spring up from several different areas, it is a logical candidate for a mediator of stereotype threat.

A few studies have demonstrated that stereotype threat conditions produce higher levels of self-reported anxiety, using the Spielberger (1970) state-trait anxiety instrument (Spencer et al., 1999; Stone, Lynch, Sjomeling, & Darley, 1999). However, anxiety was found to only have a marginal effect and could not be deduced as a complete mediator of stereotype threat. Osborne (2001) demonstrated that anxiety partially mediates stereotype threat effects in African-American and Latino students by measuring levels of self-reported anxiety in high school students on three different achievement tests. It should be noted that no mediation effect was found in Native American students and the group differences in anxiety for African-American

and Latino students were minimally significant. In the same study, it was also found that self-reported anxiety partially mediated stereotype threat effects on women's math performance (Osborne, 2001; Spencer et al., 1999).

Anxiety has also been examined as a mediator of stereotype threat by direct, physiological assessments of anxiety instead of solely relying on self-reports. For example, Blascovich, Steele, Spencer, and Quinn (2001) found that African-Americans experienced increases in blood pressure under stereotype threat conditions. Although a few studies have indicated anxiety as a partial mediator of stereotype threat (e.g., Blascovich et al., 2001; Osborne, 2001; Spencer et al., 1999), there are numerous studies that have not found evidence of anxiety as a partial or complete mediator (Gonzales et al., 2002; Keller & Dauenheimer, 2003; Spencer et al., 1999; Steele & Aronson, 1995). Thus, the available evidence is inconsistent regarding whether anxiety is related to depressed performance under stereotype threat conditions (Smith, 2004).

Working Memory

A reduction in working memory capacity is another underlying process that has been empirically evaluated as a mechanism of stereotype threat. Working memory integrates new information received from environmental input with stored information from long-term memory. Attention helps in the identification and selection of information for further processing in working memory (Baddeley, 1996). It is hypothesized that attentional resources focused on dispelling negative stereotypes are no longer available, leading to subsequent difficulty encoding and retrieving information in long-term memory and the impairment test performance. Schmader and Johns (2003) investigated the relationship between stereotype threat and working-memory capacity and demonstrated that students of color and females performed lower on working memory tasks after the priming of negative stereotypes. In a study regarding ethnicity, European-American and Latino undergraduates completed the operation span task. The

operation span task is a dual processing test in which participants must evaluate whether a mathematical equation is correct or incorrect while memorizing words for later recall (Turner & Engle, 1989). In the stereotype condition, the task was described as measuring intellectual ability. The task was described as a measure of working memory in the control condition. Latino students recalled significantly fewer words than European-American students under stereotype threat conditions, indicating that the Latino students' working memory was disrupted when they perceived that their intellectual ability was being assessed. In a second study regarding gender, male and female students completed the operation span task. In the stereotype threat condition, the task was described as measuring mathematic aptitude that is related to group differences on standardized math tests. Female students recalled significantly fewer words than male students on the operation span task, demonstrating reduced working-memory capacity. Thus, the evidence that is currently available on working memory as a mediating factor is generally supportive.

Additionally, there is research that examines the effect of stereotype threat on other forms of cognitive functioning. For example, Quinn and Spencer (2001) examined whether stereotype threat disrupts one's ability to formulate the problem-solving strategies that are required to complete complex mental tasks, such as advanced math problems. Females under stereotype threat conditions had greater difficulty formulating problem-solving strategies while completing mathematical word problems than when in reduced threat conditions. Similarly, Croizet and colleagues (2004) revealed that an increased mental load, which is indicated by reductions in heart rate variability, can mediate the negative effects of stereotype threat. Heart rate usually increases during mental tasks and heart rate variability, interval fluctuations between consecutive heart beats decreases consistently with mental load (Jorna, 1992). Based upon the stereotype that

students majoring in psychology have lower intelligence than students majoring in physical sciences, psychology students were compared with engineering students regarding their performance on an intelligence test. In the stereotype condition, the test was described as measuring the intellectual ability required in logical and mathematical reasoning. In the control condition, the test was described as a non-diagnostic laboratory exercise. Psychology students performed lower than engineering students under stereotype threat conditions. Moreover, psychology students experienced a larger increase in heart rate and a larger decrease in heart rate variability than the engineering students. These results indicate that when presented with a task that is evaluative, stigmatized group members experienced increased mental load. Evidence regarding whether depressed problem-solving ability or increased mental load is related to lower performance under stereotype threat conditions is emerging. However, more research in these areas is needed to establish substantial evidence.

Evaluation Apprehension

Evaluation apprehension has also been considered as a mediating factor of stereotype threat. It is hypothesized that stereotype threat impairs one's performance by generating a debilitating self-consciousness about how others are evaluating him or her (Smith, 2004). Steele and Aronson (1995) assessed the evaluation apprehension hypothesis by having African-American and Latino participants under stereotype threat condition indicate the degree to which providing their race concerned them and found marginal effects. Evaluation apprehension was further assessed by requiring European-American males threatened by the stereotype of Asian intellectual superiority to complete a self-report scale that rated how much they worried about the experimenter judging them following a difficult math test (Aronson et al., 1999). A majority of the participants under the threat condition reported worrying about what the experimenter thought of them. However, the self-report scale used in the study has been challenged as an

inadequate measure of evaluation apprehension (Smith, 2004). Due to marginal results and questions regarding the methodology of assessment across various studies, evaluation apprehension is a less viable hypothesis for the mediation of stereotype threat effects.

Effort

The withdrawal and overextension of effort has been examined as mediators of the negative effects of stereotype threat. Steele and Aronson (1995) propose that individuals under stereotype threat experience self-doubt which reduces motivation, leading to less effort and subsequent poor performance. In contrast, it has been proposed that individuals under stereotype threat expend more effort than non-threatened counterparts in the pursuit of dispelling the stereotype, leading to overexertion and subsequent poor performance (Aronson et al., 1999). Numerous studies that operationalize effort as the number of items attempted or the time spent on test items found that effort does not mediate the negative effects of stereotype threat on academic performance (Aronson et al., 1999, Spencer et al. 1999, Ambady et al., 2001). Self-reports have also been used to evaluate effort as a mediator (Gonzales et al., 2002; Keller & Dauenheimer, 2003; Stone et al. 1999). However, effort was found not to mediate stereotype threat. Since the discovery of stereotype threat effort has been identified as a factor that intuitively mediates stereotype threat. Therefore, various methodologies are arising in the examination of effort as a mediator of stereotype threat.

Researchers have examined various mediating variables of stereotype threat. Unfortunately, no single construct has been reliably identified as a complete mediator of stereotype threat. The complexity of operationalizing and examining the various hypothesized mediating variables of stereotype threat has prevented a consensus. Therefore, how stereotype threat impairs performance is still unclear. The affective mediators of anxiety and evaluation apprehension have been examined individually as separate factors. However, both capture the

same feeling of worry about confirming negative stereotypes, resulting in the question of whether anxiety and evaluation apprehension are the same affect being called two different names. Withdrawal and overextension of effort has also been identified as an affective mediator of stereotype threat. Yet, difficulty in operationalizing effort has resulted in a lack of consensus on the appropriate methodological approach to investigating effort as a mediator of stereotype threat. While research regarding the reduction of working memory capacity is methodologically sound, working memory capacity does not solely capture the process of stereotype threat. Stereotype threat is a complex phenomenon that may involve multiple, related affective and cognitive mediators that impair performance. Specifically, stereotype threat may be comprised of interrelated affective factors that reduce attention and/or working memory.

Stereotype Threat in Actual Settings

Although empirical evidence that stereotype threat, very few stereotype threat studies have been conducted in authentic test settings and not in a laboratory (Stricker, 1998; Stricker & Ward, 1998; Walters, Lee, & Trapani, 2004). Therefore, the question of whether stereotype threat occurs in authentic testing settings still remains. Stricker (1998) examined whether requiring high school students to identify their ethnicity and gender prior to taking the exam, a commonly used subtle method of evoking stereotype threat in laboratory investigations, would impact performance on the Advanced Placement Calculus AB Examination in an authentic test administration. Identifying one's ethnicity and gender had no significant effect on the test performance of African-American or female examinees. Similarly, Stricker and Ward (1998) examined whether requiring community college students to identify their ethnicity and gender upon completing the exam would impact performance on the Computerized Placement Tests in an actual test administration. There were no significant differences between African-American and female examinees that provided their ethnicity and gender and their counterparts that were

not required to provide that information. Thus, environmental factors that evoke negative effects of stereotype threat in laboratory settings did not impair performance in an authentic testing situation.

In a similar study, Walters, Lee, and Trapani (2004) examined whether stereotype threat occurs in authentic test settings without intentional manipulation of the environment to evoke thoughts of stereotypes. Specifically, they examined whether size, activity level, and social atmosphere of the test centers, as well as the gender and ethnicity of test administrators, impacted performance on the GRE. No evidence of stereotype threat was found. Moreover, test administrator ethnicity and gender had no significantly positive or negative impact on the performance of African-American or female students. It was hypothesized that one's typical environment and exposure to people of similar ethnicity may affect susceptibility to stereotype threat. In other words, students that are commonly exposed to people of similar ethnicity will not experience awareness or social comparison of a test administrator of the same ethnicity. Conversely, students that are rarely exposed to people of similar ethnicity are more likely to be aware of people of same ethnicity in their environment and perceive a sense of collective identity. Once more, stereotype threat effects that were found in laboratory settings were not found in an authentic testing setting.

Administering a standardized exam in any setting can cause evaluation apprehension, yet laboratory settings are more threatening for examinees. Taking an exam in an authentic testing situation will result in a score that is used in making educational decisions (e.g., graduation eligibility, college admission decisions, etc.), while taking an exam in a laboratory setting will result in a score that is used for research regarding group differences in test performance. Thus, taking a standardized exam in an authentic testing situation has personally relevant implications,

resulting in less susceptibility of stereotype threat. Conversely, taking a standardized exam in a laboratory for research purposes has group implications, increasing susceptibility of stereotype threat for stigmatized group members.

Reducing Stereotype Threat

Despite the continuing debate surrounding the underlying processes of stereotype threat and its existence in actual test settings, another body of research has emerged that focuses on identifying interventions for preventing or reducing stereotype threat. Steele (1997) provides the “wise schooling theory” which purports that various principles of multicultural education can prevent or reduce stereotype threat. He recommends multicultural education as a means of addressing the achievement gap because it can build school identification in students that do not identify with academics and reduce stereotype threat for students that are concerned about their academic performance. Valuing multiple perspectives in the classroom can demonstrate an appreciation of diversity and promote an environment in which stereotypes are less likely to be used and validated (Steele, 2004).

Providing role models can also dispel stereotypes that students may endorse and is a major component of the wise schooling theory. Specifically, exposing students to “people from the stereotype-threatened group who have been successful in the domain” can demonstrate that excelling in that domain is possible (Steele, 2004, p. 695). Marx and Roman (2002) demonstrated that a female role model prevented stereotype threat effects among female undergraduates. Role model was operationalized as a female that is highly competent in math. To display competence and foster status as a role model, the test administrator presented the math test as a difficult exam she created and that she would provide feedback regarding each test taker’s strength and weaknesses following the exam. Under stereotype threat conditions, female students performed as well as male students on a difficult math test when the test administrator

was a female role model. In contrast, female students performed lower than their male counterparts on a difficult math test when the test was administered by a male. Therefore, providing role models to students of stigmatized groups can prevent stereotype threat.

Building positive teacher-student relationships is another component of the wise schooling theory and is paramount in multicultural education. Stereotype threat evokes the fear that others in one's environment will doubt his or her abilities. Building relationships with students that are based in positive regard for one's potential can reduce feelings of conditional acceptance and performance-based approval by teachers (Nieto, 2004). Cohen, Steele, & Ross (1997) demonstrated that critical feedback can be highly motivating for African-American students when coupled with optimism regarding their potential. Thus, positive teacher-student relationships can decrease stereotype threat.

Taylor and Antony (2000) explored Steele's wise schooling theory through a qualitative, ethnographic study, which examined how certain universities have reduced stereotype threat from negatively impacting graduate students of color. They conducted semi-structured, open-ended interviews with 12 African-American doctoral students from predominantly European-American universities. Analysis of the interviews revealed converging evidence for the importance of building positive teacher-student relationships in the reduction of stereotype threat. Eleven out of 12 students reported having positive relationships with their advisors that were supportive and reaffirmed their academic value, reducing their susceptibility to stereotype threat.

In contrast to many factors that contribute to the achievement gap, stereotype threat is situational. Therefore, various modifications in the environment have been considered for reducing or eliminating stereotype threat. Based upon the premise that an individual must

perceive a collective identity to a stigmatized group in order to succumb to stereotype threat (Steele & Aronson, 1995), Ambady and colleagues (2004) proposed that individuation prior to an exam can reduce susceptibility to stereotype threat. Prior to completing a math test, female undergraduates under the individuation condition were required to fill out a survey of self-description questions, as well as identify three negative and positive personal traits. Even after direct priming of stereotypes regarding mathematical inferiority of women, female students under individuation conditions performed significantly better than their non-individuated counterparts. The authors concluded that one's identity is multi-faceted and stimulating various aspects of identity can make a stereotype that is applicable only to one particular social identity minor and irrelevant.

The role of self-categorization in the reduction of stereotype threat has also been examined. In one study, female students were required to describe themselves in an open-ended format prior to completing a difficult math test. Allowing female students to activate more individualistic aspects of their identity increased their math performance. In a second study, the role of self-affirmation in the reduction of stereotype threat was also examined. Based upon Steele's (1997) assertion that stereotype threat is a threat to one's sense of self-adequacy, Croizet and colleagues (2001) hypothesized that providing participants of stigmatized groups the opportunity to affirm positive aspects of their self-concept immediately before taking a test should reduce the perception of threat, subsequently alleviating negative consequences on performance. Female students in the experimental condition were required to complete questionnaires that implied that they were participating in the study because they were good students, evoking self-affirmations of academic competence. Female students under the standard stereotype threat condition performed lower than their male counterparts. In contrast, female

students under the experimental stereotype threat condition that completed the self-affirmation questionnaire performance increased, even higher than their male counterparts. Thus, emphasizing one's positive self-image through positive self-affirmations may reduce the negative effects of stereotype threat.

In a similar investigation of stereotype interventions, Aronson, Fried, and Good (2002) proposed that reconceptualizing intelligence as expandable instead of fixed can reduce stereotype threat by lessening the power of stereotypes that purport group intellectual inferiority. In the experimental condition of their study, undergraduates participated in a mock pen pal program in which they wrote three letters to encourage a seventh-grade student that was experiencing academic difficulties. Participants were prompted to write letters that encouraged students to work hard regardless of their environments and to stress that intelligence is malleable, comparable to a muscle that grows through learning. The purpose of the mock pen pal program was to persuade the writers themselves to believe the malleability of intelligence. African-American and European-American students that participated in the experimental condition earned higher grade point averages than their counterparts in the control conditions.

Similarly, an intervention program which focused on promoting the belief that intelligence is expandable was effective in increasing academic identification and academic achievement in secondary school students (Good, Aronson, Inzlicht, 2003). Specifically, college students mentored seventh-grade students in which they were encouraged to attribute academic difficulties to the novelty of entering secondary school and to view intelligence as expandable, which can be improved through education. Females and students of color that participated in the mentor program performed significantly higher on a standardized test than their counterparts in the control condition.

Researchers have examined various interventions for preventing or reducing stereotype threat. Steele's wise schooling theory proposes a framework of multicultural education practices that could foster a strong self-perception that is less susceptible to stereotype threat. However, Steele's wise schooling theory provides an overall approach in educating students to prevent stereotype threat and does not suggest specific interventions to implement in the environment during the actual testing situation. Similarly, reconceptualizing intelligence has been found to prevent stereotype threat but it has not been investigated as an intervention that is implemented in a specific testing situation. While improving the overall schooling of students and developing intervention programs that change students' perceptions of themselves and their abilities over time can be effective in preventing stereotype threat, greater effort to identify interventions to reduce stereotype threat when it is most salient, during the actual testing situation, is needed. Individuation and self-categorization have emerged as specific interventions implemented in the testing environment. Yet, further research is needed for strong empirical support of either intervention. Moreover, individuation and self-categorization are similar in the effort to reduce the sense of collective identity, resulting in the question of whether they are actually the same intervention in different forms.

There is qualitative support for Steele's wise schooling theory as a whole and emerging quantitative support of specific components, such as role models. The use of role models in the testing situation has been found to reduce stereotype threat among female undergraduates (Marx & Roman, 2002). Further investigation regarding the impact of role models in the testing situation among students of color is needed. Additionally, defining a role model and operationalizing role model status need to be carefully considered in future research to reduce concerns regarding methodology.

Proposed Model

Steele's wise schooling theory (1997) proposes that role models can reduce stereotype threat by dispelling negative stereotypes and demonstrating that members of a respective stigmatized group can excel in a domain. The term role model is often used and can be defined in many ways. For the purpose of this study, role model was operationalized on the basis of previous research regarding role models and stereotype threat and social identity theory (Tajfel & Turner, 1986).

Marx and Roman (2002) demonstrated that female role models reduced stereotype threat effects on the math performance of female undergraduates. They identified three characteristics that a role model must encompass to be effective in improving academic performance. The student must be domain-identified and care about their academic performance (Steele, 1997). Students must perceive the role model as similar in physical appearance and domain identification (Lockwood & Kunda, 1997). Finally, the success of the role model must be viewed as attainable. Overall, the effectiveness of a role model relies heavily on a student's ability to make social comparisons with the role model.

A person's identity is complex, constructed of various layers of individual and group identity. Group identity activates a collective identity that allows an individual to perceive similarities with other members of a social group. Tajfel and Turner (1986) acknowledge the individual and group dynamic of a person's identity in the social identity theory (SIT), which proposes that there are two components on which identity is built. The first component is personal identity, the unique physical and personality characteristics of an individual. The second is social identity, which are the memberships an individual has in various groups. SIT presents an individual's identity as a point on a continuum ranging from personal identity to social identity, with one's identity at a specific time represented by a single point on the continuum. An

array of variables affect whether personal identity or social identity will be most salient, and which of the many group memberships will be most prominent in one's social identity.

Additionally, Tajfel and Turner (1986) argued that everyone strives to maintain a positive social identity, which frequently occurs through social comparison with other social groups. Individuals tend to categorize their social world into ingroups and outgroups. An individual is motivated to improve the position of their ingroup in comparison to outgroups which improves the value of one's personal identity (Schmader, 2002).

Worchel, Iuzzini, Coutant, and Ivaldi (2000) present an expanded model of identity, purporting that there are four, instead of two, components that form identity. One component is personal identity, which like the SIT model includes an individual's physical and personality characteristics. A second component, which is labeled group membership, encompasses the social identity end of the continuum of SIT. Group membership includes the categorization of the social world into groups and perceptions about membership in these groups. Additionally, social identity is as much about the groups to which one does not belong (outgroups) as the group to which one does belong (ingroup). The third component is intragroup identity, which recognizes that individuals occupy positions within their ingroups. Specifically, intragroup identity includes the status and role one has within a group and the relationship one has with ingroup members. The fourth and final dimension, group identity, emphasizes the need of the group to develop an identity of its own. Group identity includes the group's beliefs, values, history, and reputation in comparison to other groups. Groups strive to maintain their collective identity, often pressuring individual members to support and represent this identity. In contrast to the single continuum of SIT, this expanded model proposes that identity operates on all four components simultaneously. Each component has its own continuum ranging from high to low

salience, the degree of prominence or awareness of a dimension at a specific time. Thus, an individual's identity at any single point of time is made up of contributions from each of these dimensions.

Applying Worchel et al.(2000) to the current study, an African-American student with an African-American role model may experience the following in their levels of identity when conducting social comparison with the role model: (1) awareness of personal identity may be triggered by a similarity in skin color with the test administrator, (2) being African-American can activate awareness of group membership, (3) awareness of intragroup identity may be activated by the belief that as a university student you are expected to perform better than other African-Americans that have not acquired a post-secondary education, and (4) awareness of group identity can be activated by the motivation to positively represent African-Americans. In this situation, African-American students may experience greater salience in personal identity and intragroup identity. Specifically, African-American students will be aware of the role model, focusing more on their similarities with the role model. There will be less focus on the difference between the ingroup and outgroup and more focus within the ingroup, reducing the susceptibility of stereotype threat. The less one perceives differences between their ingroup and outgroups, the less susceptible they are to stereotype threat. African-American role models reduce the student's focus on the comparison of their ingroup's performance with the outgroup's performance. Additionally, African-American role models represent an exception to the negative stereotype and promote the plausibility of academic success for students of color.

In contrast, when a European-American administers the test to an African-American student under stereotype threat conditions it creates an environment that emphasizes the difference in the student's ingroup (African-Americans) from the outgroup (European-

American). The African-American student's awareness of personal identity will more likely be triggered by a difference in skin color from fellow test-takers and the test administrator. In addition, awareness of group identity will be activated by concern with dispelling the negative stereotype of intellectual inferiority among African-Americans. Stereotype threat activates the awareness that an individual's poor performance can be generalized to one's group, impairing academic performance (Cohen & Garcia, 2005).

A person's awareness of others during testing has been used as a prime for stereotype threat in previous studies (Aronson, Lustina, Good, & Keough, 1999; Ben-Zeev, Fein, Inzlicht, 2005; Schmader et al., 2003; Spencer et al., 1999; Steele et al., 1995). It is proposed that this same awareness of others can also prevent or reduce stereotype threat. Occasionally, the administrator is used as a prime in stereotype threat research, either as a member of a group regarded as intellectually superior or the person that describes the task as diagnostic of intellectual ability (Schmader & Johns, 2003; Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995). Thus, the administrator can have a significant effect on the test-taker.

Consistent with Steele (1997) and Marx and Roman (2002) that purports providing role models can dispel stereotypes that students may endorse, the current study proposes that a test administrator that serves a positive role model can prevent or reduce stereotype threat among African-Americans. Group identity can allow the test-taker to relate to the administrator as a person of the same stigmatized group that is successful academically, contradicting the stereotype. In other words, the role can elicit a sense of confidence and/or self-efficacy that optimizes the student's performance.

In addition, the ethnicity of the test administrator can influence a student of color's level of evaluation apprehension. Walters, Shepperd, and Brown (2003) found that African-American

undergraduates performed worse than European-American undergraduates on a standardized test when the administrator was European-American, but equal to European-American undergraduates when the administrator was African-American. They proposed that students of color underperformed when the administrator was European-American due to evaluation apprehension. Specifically, students who care about their academic competence are usually motivated to portray a competent image to the test administrator. Students of color may believe that a European-American test administrator endorses stereotypes of group intellectual inferiority, evoking evaluation apprehension, distraction, and subsequent poor performance. In contrast, students of color may believe that the African-American administrator does not endorse negative stereotypes and will evaluate each test taker on his or her individual competence.

Converging evidence was provided by Brown and Dobbins (2004) who found that students of color held higher performance expectations and expected a fair evaluation in class when they anticipated evaluation by an instructor of the same ethnicity. In contrast, students of color held lower performance expectations when they anticipated evaluation by a European-American instructor. Therefore, it is proposed that an African-American test administrator can also reduce stereotype threat in African-American students through increased performance expectations. Students of color may assume that because the African-American administrator has been academically successful he or she does not endorse stereotypes of group intellectual inferiority, believes that the test takers are academically competent, and will evaluate each test-taker on their individual performance. In addition, positive role models of the same ethnicity may reduce stereotype threat in students of color by serving as an exception to the negative stereotype. As an exception to the stereotype, the role model challenges the plausibility of the negative stereotype and promotes that stereotypes are generalizations and do not have to apply to every member of

the stigmatized group. Moreover, positive role models of the same ethnicity and/or gender further represent an attainable goal which motivates students to work harder and achieve academically (Lockwood & Kunda, 2002; Zirkel, 2002).

The current study attempted to clarify which features of the test administrator are needed to reduce stereotype threat. Walters et al. (2003) found that a test administrator of similar ethnicity, perceived through similar appearance, can reduce stereotype threat. Conversely, Marx and Roman (2002) purported that students must perceive the role model as similar in physical appearance and domain identification, as well as the success of the role model as attainable for the role model to effectively reduce stereotype threat. Both studies demonstrate that similar physical appearance activates collective identity between the test administrator and participants. Consequently, the question of whether the other features of a role model that are outlined in Marx and Roman (2002) are needed for a test administrator to serve as a role model and reduce stereotype threat. Thus, this study examined whether results of Marx and Roman (2002) were a function of role model status or just similar physical appearance of test administrator.

Further investigation of the role of test administrator in the reduction of stereotype threat using a sample of African-American undergraduates from a predominantly European-American (be consistent) university would be beneficial. A majority of studies that have demonstrated negative effects of stereotype threat among students of color have been conducted at predominantly European-American universities (Aronson, Quinn, & Spencer, 1998; McKay et al., 2003; Steele, 1997; Steele, 2004; Steele & Aronson, 1995, Steele & Aronson, 1998; Walters, Shepperd, & Brown, 2003), an environment in which students of color consistently struggle academically and socially (Allen, 1992; Flowers, 2002). Demonstrating the effects of test administrator ethnicity on student performance can have great implications in the development of

interventions and support programs for students of color, as well as the recruitment and retention of faculty of color, at predominantly European-American universities.

Study Overview and Hypothesis

The purpose of this study was to explore factors that can prevent stereotype threat, a phenomenon in which negative stereotypes about intellectual abilities can produce a threat that upsets the performance of women in mathematics and students of color in academic domains (Steele, 1997). The specific research question for this study was as follows:

Is similar domain identification and attainable goal status required for an African-American test administrator to serve as a role model to prevent stereotype threat among African-American students?

Steele's wise schooling theory (1997) proposes that various principles of multicultural education can prevent or reduce stereotype threat, including providing role models to students of stigmatized groups. Role models can reduce stereotype threat by dispelling negative stereotypes and demonstrating that members of a respective stigmatized group can excel in a domain (Steele, 1997). Thus, this study examined whether role models can reduce stereotype threat among students of color, which has been shown to mediate the effects of stereotype threat among women in the domain of mathematics (Marx & Roman, 2002).

The effectiveness of a role model relies heavily upon a student's ability to relate and make social comparisons with the role model. A student's social identity is complex, layered with ethnicity, gender, socioeconomic status, and various other individual and group characteristics (Worchel et al., 2000). Lockwood and Kunda (1997) purport that students must perceive similarities in domain identification and attainable goal status in a role model for he or she to be motivating. Students must also perceive similarity in physical appearance, for it facilitates social comparisons in ethnicity and gender. Walters, Shepperd, and Brown (2003) found that test administrators that are similar in ethnicity can prevent stereotype threat in African-American

students. Mere similarity in physical appearance allowed the students to identify the test administrator as a fellow member of their stigmatized group, positively impacting their academic performance under stereotype threat conditions. Therefore, this study examined whether similar domain identification and attainable goal status are required for an African-American test administrator to serve as a role model and prevent stereotype threat among African-American students. Specific hypotheses for this study are as follows:

- A 3-way interaction between ethnicity of the administrator, ethnicity of student, and role model status of administrator is expected. Specifically, ethnic similarity will prevent stereotype threat.
- The performance of African-American students, the stigmatized group members, will be significantly affected by the ethnicity and role model status of the test administrator (Marx & Roman, 2002; Walters, Shepperd, & Brown, 2003). Specifically, African-American students are expected to perform to the level of European-American students when the test administrator is African-American but superior performance is expected when the test administrator is both African-American and a role model.
- Conversely, European-American students will be unaffected by the ethnicity or role model status of the test administrator (Marx & Roman, 2002; Walters, Shepperd, & Brown, 2003).

These hypotheses were evaluated by manipulating stereotype threat, describing the test as diagnostic of intellectual ability, among a sample of African-American and European-American undergraduates using African-American or European-American test administrators and role models. Participants completed a brief test questionnaire regarding their test experience. Based on previous laboratory research (Schmader & Johns, 2003; Walters, Shepperd, & Brown, 2003), the questionnaire included items that assessed whether participants' perception of the test were consistent with participants of previous laboratory investigations of stereotype threat. In other words, there were questionnaire items that assessed participants' perception of the test as an evaluation of group differences. In addition, an item that required participants to estimate the administrator's expectation and interpretation of his or her performance was also included to

evaluate the participants' awareness of the test administrator. Furthermore, an item that required participants to rate their perception of the test administrator as a role model was also included.

CHAPTER 2 METHODS

Participants and Design

All participants were college students enrolled in a large state university in the south eastern United States. Participants included 58 African-American and 54 European-American Educational Psychology students or scholarship students who participated for course credit or credit towards a volunteer requirement to maintain their scholarships. Additional demographic information regarding participants is presented in Table 2-1. Participants were recruited for participation if they reported in a recruitment survey that they were African-American or European-American and had a neutral or positive attitude toward verbally-oriented classes. The recruitment survey requested demographic information: race/ethnicity, age, major, SAT score, and verbal domain identification (Appendix A). Participants had to identify themselves in the category of European-American and African-American, activating participants' awareness of group identity. The classification of "Multiracial" was provided in the recruitment survey. However, only students that identified themselves as solely African-American or European-American were eligible to participate in the study due to previous research that found that one who highly identifies with a stigmatized group is most likely to succumb to stereotype threat (Steele, 1997; Smith & White, 2001).

To assess verbal domain identification participants were asked to respond to the following statement (Steele, 1995): "Please indicate your typical attitude toward verbally-oriented classes (literature, language, writing)." Responses were answered on a Likert scale ranging from 1 (strongly dislike) to 5 (strongly like). Similar to previous research (Marx & Roman, 2002; Walters et al., 2003), only those who responded with a 3 or greater were eligible to participate to avoid students that dislike verbally-oriented tasks and are unlikely to give maximum effort.

Participants were also asked to provide the number of academic scholarships they have received to acquire anecdotal information regarding their academic domain identification. Participants were randomly assigned to one of four conditions in a 2 (test administrator ethnicity: African-American vs. European-American) \times 2 (test administrator status: role model vs. non role model) \times 2 (student ethnicity: African-American vs. European-American) between-subjects factorial design.

Procedure

To evoke stereotype threat various actions were taken. Stereotype threat was initially activated during the recruitment phase in which students were asked to indicate their ethnicity on the recruitment survey, signifying that ethnicity would be a variable in the study (Appendix A). During the experimental sessions, the consent form served as a trigger of stereotype threat and activated group identity, indicating that participants were selected for the study because they identified themselves as African-American or European-American (Appendix B). Stereotype threat was also activated through the description of the study as an investigation of verbal reasoning abilities immediately before the exam (Steele & Aronson, 1995). The ethnic composition of experimental session groups further triggered stereotype threat. The combination of African-American and European-American participants in each session activated group identity and the subsequent social comparisons and awareness of stereotype threat.

An African-American or European-American test administrator conducted each experimental session with a group of four to seven participants ($M = 5.09$; $SD = 1.23$), including at least two participants of each ethnic group. On arriving for the experiment, participants were given a consent form and seated in the testing room. At the beginning of the session, the administrator officially greeted participants and described the study as an investigation of verbal reasoning abilities (Appendix C). To promote maximum effort in performance participants were

told that they would receive feedback on their verbal strengths and weaknesses at the end of the session (Steele & Aronson, 1995). Students that are concerned about their academic performance are more likely to want to know their score and/or how to improve their test performance. During the role model condition, the test administrator also introduced themselves as a doctoral candidate during the greeting to create an impression of a role model (Appendix D). To further foster status as a role model and display competence, the test administrator presented the test as a difficult exam she created and that she would be provide feedback regarding their test performance (Marx & Roman, 2002).

Participants completed items from the GRE that are consistent with those administered by Steele and Aronson (1995; Appendix E). Although participants were offered feedback in the test description, they did not actually receive feedback on their performance. Upon completing the test, participants completed a brief questionnaire regarding their test experience (Appendix F). To test their perception of stereotype threat, participants rated how much they agree with the following statements from Schmader & Johns (2003): “I am concerned that the researcher will judge [African-Americans/European-Americans], as a whole, based on my performance on this test” and “The researcher will think that [African-Americans/European-Americans], as a whole, have less intellectual ability if I did not do well on this test.” To assess the difference of participants’ perception of the test administrator across role model and non-role model conditions, participants rated how much they agree with the following statement: “I believe the researcher will be able to provide feedback that will help me on future tests.” Responses were answered on a Likert scale ranging from 1 (strongly disagree) to 7(strongly agree). Participants were debriefed after completing the questionnaire, receiving the actual purpose of the study and told that they would not receive feedback on their performance.

Table 2-1. Demographics of sample.

| | Total Sample N | African-American N | European-American N |
|------------------------|-------------------|-----------------------|------------------------|
| Number of Participants | 112 | 58 | 54 |
| Gender | | | |
| Female | 90 | 49 | 41 |
| Male | 22 | 9 | 13 |
| College Level | | | |
| Junior/Senior | 71 | 35 | 36 |
| Freshman/Sophomore | 41 | 23 | 18 |
| Scholarship Status | | | |
| Non-Scholarship | 79 | 33 | 46 |
| Scholarship Recipient | 33 | 25 | 8 |

CHAPTER 3 RESULTS

Omnibus Analysis of Test Performance

Test performance was calculated as a percentage score by dividing the number of problems answered correctly out of 17 items by 17 and multiplying the remainder by 100. Test performance scores were analyzed by performing a 2 (student ethnicity: African-American or European-American) \times 2 (test administrator ethnicity: African-American or European-American) \times 2 (test administrator status: role model or non-role model) ANCOVA on test performance, with self-reported verbal SAT score serving as the covariate. The ANCOVA results are presented in Table 3-1. This analysis revealed a significant effect for the covariate, $F(1, 93) = 25.63, p < .001$, partial $\epsilon^2 = .22$; no main effect for student ethnicity, $F(1, 93) = 1.76, p = .19$, partial $\epsilon^2 = .02$; no main effect for test administrator ethnicity, $F(1, 93) = .52, p = .47$, partial $\epsilon^2 = .01$; and no main effect for test administrator status, $F(1, 93) = .01, p = .91$, partial $\epsilon^2 = .00$. In addition, no interactions were found, $F_s < 1.16, p_s > .29$. Descriptive statistics for test performance are presented in Table 3-2.

Test Experience Questionnaire

As a manipulation check to verify perception of stereotype threat and the difference in perception of the test administrator across role model and non-role model conditions, participants completed a brief questionnaire regarding their test experience. The questionnaire was comprised of two questions regarding their perception of stereotype threat and one question assessing perception of the administrator. Participants responded using a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Each questionnaire item was analyzed using a 2 (student ethnicity: African-American or European-American) \times 2 (test administrator ethnicity:

African-American or European-American) \times 2 (test administrator status: role model or non-role model) ANOVA.

Stereotype Threat Questionnaire Items

Analysis of the extent to which participants were concerned that the test administrator would judge their respective ethnic group, as a whole, based on their performance yielded a main effect for student ethnicity, $F(1, 104) = 22.17, p < .01$. As expected, European-American students ($M = 2.06, SD = 1.24$) were less concerned than African-American students ($M = 3.48, SD = 1.82$) that the researcher would judge their respective ethnic group based on their test performance. No main effect for test administrator ethnicity, $F(1, 104) = .08, p = .78$, partial $\epsilon^2 = .00$, and no main effect for test administrator status, $F(1, 104) = .64, p = .43$, partial $\epsilon^2 = .01$, were found. In addition, no interactions were found, $F_s < 1.84, ps > .18$.

Analysis of the extent to which participants were concerned that the test administrator would perceive their respective ethnic group as having less intellectual ability if he or she did not do well on the test revealed a main effect for student ethnicity, $F(1, 104) = 16.74, p < .01$. European-American students ($M = 1.89, SD = 1.16$) were less concerned than African-American students ($M = 3.10, SD = 1.75$) that the researcher would perceive their respective ethnic group as having less intellectual ability if they performed poorly. No main effect for test administrator ethnicity, $F(1, 104) = .07, p = .80$, partial $\epsilon^2 = .00$, and no main effect for test administrator status, $F(1, 104) = .53, p = .47$, partial $\epsilon^2 = .01$, were found. In addition, no interactions were found, $F_s < 2.18, ps > .14$.

Test Administrator Status Questionnaire Item

Analysis of the extent to which participants believed the test administrator would be able to provide useful feedback yielded a main effect for test administrator status, $F(1, 104) = 11.43$,

$p < .01$. Test administrators in the role model condition ($M = 5.41, SD = .93$) were viewed as more likely to provide useful feedback than test proctors in the non-role model condition ($M = 4.81, SD = .98$). Thus, it is argued that role model status was effectively operationalized and presented in the role model condition. In addition, a main effect for student ethnicity, $F(1, 104) = 5.21, p = .024$, was also found. African-American students ($M = 5.33, SD = 1.0$) were more likely than European-American students ($M = 4.91, SD = .96$) to anticipate receiving helpful feedback from the test administrator. No main effect for test administrator ethnicity was found, $F(1, 104) = .00, p = .99$, partial $\epsilon^2 = .00$. In addition, no interactions were found, $F_s < 1.98, p_s > .16$.

Table 3-1. Analysis of covariance for test performance

| Source | Df | F | ϵ^2 | p |
|-----------------------------------|----|----------|--------------|-----|
| Verbal SAT (covariate) | 1 | 25.63 | .22 | .00 |
| Student ethnicity (SE) | 1 | 1.76 | .02 | .19 |
| Test administrator ethnicity (TE) | 1 | .52 | .01 | .47 |
| Test administrator status (TS) | 1 | .01 | .00 | .91 |
| SE \times TE | 1 | .08 | .00 | .78 |
| SE \times TS | 1 | .01 | .00 | .91 |
| TE \times TS | 1 | 1.16 | .01 | .29 |
| SE \times TE \times TS | 1 | .70 | .01 | .40 |
| Error | 93 | (165.38) | | |

Note. Value enclosed in parentheses represents mean square error.

Table 3-2. Test score (% correct) as a function of student ethnicity, test administrator ethnicity, and test administrator status

| | Test administrator status | | | |
|------------|---------------------------|------------------|------------------|------------------|
| | Role model | | Non-role model | |
| | AA administrator | EA administrator | AA administrator | EA administrator |
| AA student | 45.27 (14.89) | 42.21 (13.02) | 42.47 (11.21) | 41.27 (18.04) |
| EA student | 40.85 (11.89) | 38.45 (17.48) | 36.46 (13.72) | 36.00 (15.94) |

Note. AA = African-American; EA = European-American. Values enclosed in parentheses represent standard deviations.

CHAPTER 4 DISCUSSION

The purpose of this study was to explore factors that can prevent stereotype threat, a phenomenon in which negative stereotypes about intellectual abilities can produce a threat that upsets the performance of women in mathematics and students of color in academic domains (Steele, 1997). The primary intent of this study was to examine whether similar domain identification and attainable goal status are required for an African-American test administrator to serve as a role model to prevent stereotype threat among African-American students. The current study extends previous research regarding stereotype threat by attempting to clarify which features of the test administrator are needed to reduce stereotype threat, just similar ethnicity (Walters et al., 2003) or similar ethnicity, domain identification, and attainable status of the test administrator conjointly (Marx & Roman, 2002).

African-American participants were expected to perform to the level of European-American participants when the test administrator was African-American, demonstrating the inhibition of stereotype threat. Additionally, African-American participants were expected to perform better than European-American participants when the test administrator was an African-American role model. However, no evidence of stereotype threat or its reduction was found with respect to test performance. Similar ethnicity or role model status of the test administrator did not lead to an increase in test performance for African-American participants.

These findings were inconsistent with expected results that were based on previous stereotype threat research in laboratory settings (Marx & Roman, 2002; Walters et al, 2003). Conversely, these findings were consistent with previous stereotype threat research conducted in actual test settings that found no evidence of stereotype threat (Stricker, 1998; Stricker & Ward, 1998; Walters, Lee, & Trapani, 2004). While there was evidence that African-Americans were

more concerned than European-Americans that the test administrator would perceive their respective ethnic group as having less intellectual ability if he or she did not do well on the test, the concern did not lead to a disruption in their performance. Although African-Americans were more likely than European-Americans to perceive the role model as knowledgeable and credible, their awareness of the role model did not lead to significantly better performance. Although nonsignificant differences in test performance were not unexpected, these findings are remarkable because they demonstrate that some African-American undergraduates do not experience impaired test performance even when they experience evaluation apprehension. While impairment of test performance is an integral component of stereotype threat, the current findings suggest that some African-American students experience the fear of confirming negative stereotypes, but not to the extent that it impairs test performance. Thus, future studies should continue to address under what circumstances groups who often report experiencing stereotype threat are resilient to its effects during testing. Further investigation of test environment and interpersonal factors (i.e. prior educational experiences, self-efficacy, etc.) as forms of stereotype threat prevention is warranted.

It can be speculated that there was no evidence of stereotype threat in the current study because the environment was not like previous laboratory research. Experimental sessions were held in a conference room, with four to seven participants sitting at a conference table to complete the exam. The conference room was a less academic and intimidating environment than a classroom or computer lab where previous laboratory research was conducted (Marx & Roman, 2002; Walters et al., 2003), possibly reducing the susceptibility to stereotype threat.

There are additional explanations for the nonsignificant findings. Similar to the previous study in an authentic testing situation by Stricker (1998) that did not find evidence of stereotype

threat, participants were required to provide their ethnicity upon completing the exam instead of prior to taking the exam. Although students were required to identify their ethnicity in the recruitment survey and the consent form reminded participants that they were selected for the study because they identified themselves as African-American or European-American, participants may not have perceived ethnicity to be their most salient attribute during the exam. Not having to provide any personal information in the exam packet prior to the exam may have created a sense of anonymity, possibly reducing the fear of evaluation and susceptibility of stereotype threat. In addition, the exam was described as an examination of personal factors involved in solving problems that require verbal reasoning abilities, which may have shifted participants' awareness away from their group identity to their personal identity during the exam. Interestingly enough, African-American participants were more concerned than European-American participants about their performance being perceived as representative of their respective group. However, participants provided those responses on the questionnaire following the exam in which they were required to provide their ethnicity, which may have shifted participants' awareness to their group identity. Requiring participants to provide their ethnicity explicitly activates group identity and stereotype awareness while the description of the exam is more subtle. The difference in the intensity of the environmental cues may be a possible explanation for why there was some evidence of stereotype threat on the questionnaire but not on test performance. Previous studies (Marx & Roman, 2002; Walters et al., 2003) that did not require participants to provide their ethnicity before completing the exam and found evidence of stereotype threat described the exam as evaluative of intellectual abilities or mathematical ability, explicitly evoking awareness of negative stereotypes regarding group intellectual inferiority.

In contrast to previous laboratory studies that involved freshmen and sophomores from introductory psychology courses (Steele, 1995; Steele & Aronson, 1995; Walters et al., 2003; Marx & Roman, 2002), a majority of the sample was comprised of upper-level students across various college majors. Thus, the sample was similar to stereotype threat research conducted at actual GRE testing sites in which upper level students were taking the GRE for admission to graduate school. Upper-level students may be less susceptible to stereotype threat because they have had years of collegiate experience that affirms their self-concept as intelligent and academically competent. A portion of the sample was comprised of African-American and European-American students with academic scholarships. Scholarship students may be less susceptible to stereotype threat because they have earned scholarships for their superior test performance, affirming confidence in their test-taking abilities. Students with positive self-concepts regarding test performance may be less likely to fear performing poorly and confirming negative stereotypes regarding their respective groups. Moreover, the African-American participants were undergraduates of a predominantly White university who have experienced success in academic settings in which there were few African-Americans. Thus, the African-American participants may be desensitized to academic experiences in which they are in the minority, subsequently reducing susceptibility to stereotype threat.

The current study intended to examine whether similar domain identification and attainable goal status is required for a test administrator to prevent stereotype threat. However, neither test administrator ethnicity nor role model status were found to significantly impact test performance. Thus, the nonsignificant differences in test performance across conditions did not lead to clarification of whether test administrator ethnicity exclusively prevents stereotype threat

(Walters et al., 2003) or whether attainable goal status and similar domain identification also needed to prevent stereotype threat (Marx & Roman, 2002)

Prior to discussing implications of this study, it is important to mention its limitations. The most significant limitation was the diversity and size of the sample. Although the sample was comprised of a balanced number of African-American and European-American participants, the majority of the sample was upper-level students and a notable portion of the sample was scholarship students, all of whom were comfortable or expressed a preference for verbal tasks. To increase the generalizability of the study, additional lower-level and non-scholarship students could be included in the sample. In addition, a greater number of female students participated in the study, possibly skewing results. To be eligible to participate in the study, participants had to indicate a neutral or positive attitude towards verbally-oriented courses. Requiring such preference possibly reduced the number of male participants that are more likely to prefer math-oriented courses.

Some stereotype threat studies regarding differences among ethnic groups primarily focused on accumulating a balanced sample of African-American and European-American participants, resulting in minimal focus on a balance of gender across participants and a sample of more females than males (McKay et al., 2003; Steele & Aronson, 1995; Walters et al., 2003; Walters et al., 2004). Future research could include the systematic investigation of test administrator and student gender and ethnicity as factors in the prevention of stereotype threat among African-American students. Specifically, greater effort to balance gender and ethnicity of the sample could lead to a better understanding of stereotype threat and increase generalizability. Although there were an adequate number of participants, increasing the gender college level diversity of participants would make the sample more representative of the university population.

Furthermore, data analysis of test performance involved self-reported verbal SAT scores as a covariate. Self-reported test scores have to be interpreted with caution due to the fact that they may not be as valid and reliable as actual test scores. It has been found in previous research that students who did not perform well on standardized tests were more likely to report false test scores that are higher than their actual score (Kuncel, Crede, & Thomas, 2005). It is important to note that there were no significant ethnic group differences in the self-reported verbal SAT scores.

This study addresses various issues that are relevant to the disparity in school achievement and standardized test performance among racial and ethnic groups. This study did not reveal evidence of stereotype threat that was demonstrated in previous research as a possible explanation for such disparity. These findings may be a function of the limitations in this study or an indicator that test administrator ethnicity or role model status do not induce or reduce stereotype threat. These findings align with emerging research that has demonstrated a lack of evidence for stereotype threat (Stricker, 1998; Stricker & Ward, 1998; Walters et al., 2004). It is possible that stereotype threat only occurs in laboratory settings and testing environments that evoke awareness of ethnic differences among examinees. Future research should investigate possible explanations for the differences in laboratory and field study results. Further research is needed to determine which environmental factors evoke and inhibit stereotype threat.

The lack of evidence of stereotype threat in this study demonstrates that some African-American students are not susceptible to stereotype threat. While previous research has examined specific interventions or modifications in the testing in environment as a means to prevent or reduce stereotype threat (Ambady et al., 2004, Aronson et al., 2002; Croizet et al., 2001; Marx & Roman, 2002; Steele, 1997; Steele, 2004; Walters et al. 2003), further research is

needed to identify what interpersonal factors, besides ethnicity or gender, make students less susceptible to stereotype threat. Identifying personal characteristics that decrease susceptibility to stereotype threat can enhance the understanding of the phenomenon.

There is still a need for more knowledge of factors contributing to the persistent achievement gap in our society. To reduce and eventually end the disparity in school achievement and standardized test performance among racial and ethnic groups, we first must identify factors that lead to this gap. In view of the potential impact of stereotype threat findings on the disparity in standardized test performance and concern for equity in standardized testing, it is crucial that there is more investigation of the role stereotype threat plays in the test performance of students of color and methods that might ameliorate any adverse affects that stereotype threat may have on test performance.

APPENDIX A
PARTICIPANT ELIGIBILITY SURVEY

Please circle the race/ethnicity that you most identify with.

- White/European-American
- Black (non-Hispanic)/African-American
- Latino
- Asian
- Multiracial

If you took the SAT, please circle your approximate verbal score.

- Did not take SAT
- 400–450
- 451–500
- 501–550
- 551–600
- 601–650
- 651–700
- 701–750
- 751–800

Please indicate the number of academic scholarships you have ever received. _____

Please indicate your major. _____

Please indicate your typical attitude toward verbally-oriented classes (literature, language, writing).

| | | | | |
|------------------|---|---------|---|---------------|
| Strongly Dislike | | Neutral | | Strongly Like |
| 1 | 2 | 3 | 4 | 5 |

APPENDIX B CONSENT FORM

You are invited to participate in a research study that investigates personal factors involved in performance on problems requiring reading and verbal reasoning abilities. You chose to participate in the study as fulfilling part of your course or scholarship requirements. You were selected as a possible participant because you agreed to participate on a voluntary basis and have expressed a neutral or positive attitude towards verbally-oriented courses. We ask that you read this form and ask any questions you may have before agreeing to be in the study. Rashida Brown, doctoral student of the Educational Psychology department, is conducting the study. Dr. Tracy Linderholm, Assistant Professor of Educational Psychology, University of Florida, and Dr. Nancy Waldron, Associate Professor of School Psychology, are supervising this study.

Background Information:

The purpose of this study is to understand personal factors that impact performance on problems that require reading and verbal reasoning abilities. The results of this study will have educational implications in terms of providing guidance for standardized test performance.

Procedures:

You will be asked to complete a 17-item test of verbal problems. Following the test you will be asked to complete a short survey regarding your test experience. The entire procedure will require less than an hour of your time.

Risks and Benefits of Participating in the Study:

There are no direct benefits to participation in this study. The only possible risk of participating in this study is mental fatigue. The probability of this risk's occurrence is extremely low.

Compensation:

Scholars: Participation in research earns course or scholarship credit. Participants can earn volunteer credits toward maintaining their scholarships as dictated by the Office of Admissions.

or

Education course students: Participants can earn extra credits determined by the individual course instructor. Instructors will be notified that you have participated.

Voluntary Nature of the Study:

Your decision whether or not to participate will not affect your current or future relations with the University of Florida. If you decide to participate, you are free to withdraw at any time without affecting those relationships and without forfeiting the compensation (course or scholarship credit) that was agreed upon.

Confidentiality:

The records of this study will be kept private, and your identity will be kept confidential to the extent required by law. Your information will be assigned a code number. The list connecting your name to this number will be kept in a locked file and can be accessed only by the

researcher. When the study is completed and the data have been analyzed, the list will be destroyed. In addition, the experimental results will be analyzed in terms of averages across participants rather than in terms of individual performances. In any form of report we might publish, we will not include any information that will make it possible to identify a research participant.

Contacts and Questions:

The researcher conducting this study is Rashida Brown, a doctoral student. Dr. Tracy Linderholm, Assistant Professor of Educational Psychology, University of Florida, and Dr. Nancy Waldron, Associate Professor of School Psychology, are supervising this study. You may ask any questions you have now. If you have questions later, please contact the experimenter, Rashida Brown, Educational Psychology, (352) 246-5100 or Dr. Tracy Linderholm, Educational Psychology, (352) 392-0723 ext. 241 or Dr. Nancy Waldron, Educational Psychology, (352) 392-0723 ext. 232.

If you would like to speak to someone other than the researcher about your concerns regarding the study and/or your rights as a research participant, please contact UFIRB office, P.O. Box 112250, University of Florida, Gainesville, FL 32611-2250; phone (352) 392-0433.

You will be given a copy of this form to keep for your records.

Statement of Consent:

I have read the above information and have obtained a copy of this form. I have asked questions and have received satisfactory answers. I consent to participate in the study.

Signature of Participant _____ Date _____

Signature of Investigator _____ Date _____

APPENDIX C
TEST ADMINISTRATOR SCRIPT FOR NON-ROLE MODEL CONDITION

Hello,

My name is _____. Thank you for your participation. The purpose of this study is to investigate various personal factors involved in performance on problems requiring reading and verbal reasoning abilities. You are asked to complete a 17-item test of verbal problems in a format identical to the SAT exam and a short survey regarding your test experience. The test and survey will take approximately 30 minutes of your time. The test is very difficult and you should expect not to get many of the questions correct. The exam is a genuine test of your verbal abilities and limitations so that we might better understand the factors involved in both. At the end of the session, you will be given feedback on your performance that may be helpful to you for future tests by familiarizing you with some of your strengths and weaknesses in verbal problem solving. Although you can expect not to get many of the questions correct, please give your maximum effort for it will help us in our analysis of your verbal ability. Please complete each question. Since this is an analysis of your verbal ability, we ask that you indicate an answer in which you guessed by placing a check next to that item number. Once again, it is important that you give maximum effort. Thank you again for your participation. Are there any questions?

APPENDIX D
TEST ADMINISTRATOR SCRIPT FOR ROLE MODEL CONDITION

Hello,

My name is _____. I am a doctoral candidate in the Department of Educational Psychology at UF and I am researching language processing in young adults for my doctoral dissertation. Like you, I was once an undergraduate student at UF so I want to thank you for giving of your time to participate in my dissertation study. The purpose of this study is to investigate various personal factors involved in performance on problems requiring reading and verbal reasoning abilities. You are asked to complete a 17-item test of verbal problems that I have created. The test is in a format identical to the SAT exam. Following the test, you are asked to complete a short survey regarding your test experience. The test and survey will take approximately 30 minutes of your time. The test is very difficult and you should expect not to get many of the questions correct. The exam is a genuine test of your verbal abilities and limitations so that I might better understand the factors involved in both. At the end of the session, I will give you feedback on your performance that may be helpful to you for future tests by familiarizing you with some of your strengths and weaknesses in verbal problem solving. Although you can expect not to get many of the questions correct, please give your maximum effort for it will help me in the analysis of your verbal ability. Please complete each question. Since this is an analysis of your verbal ability, I ask that you indicate an answer in which you guessed by placing a check next to that item number. Once again, it is important that you give maximum effort. Thank you again for your participation. Are there any questions?

APPENDIX E
STUDY TEST QUESTIONS

Directions: Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five lettered words or sets of words. Choose the word or set of words for each blank that best fits the meaning of the sentence as a whole.

1. The new biological psychiatry does not deny the contributing roles of psychological factors in mental illness, but that these factors may act as a catalyst on existing physiological conditions and _____ such illnesses.

- A. disguise
- B. impede
- C. constrain
- D. precipitate
- E. consummate

2. During periods of social and cultural stability, many art academies are so firmly controlled by _____ that all real creative work must be done by the _____.

- A. dogmatists . . disenfranchised
- B. managers . . reactionaries
- C. reformers . . dissatisfied
- D. impostors . . academicians
- E. specialists . . elite

3. The first World War began in a context of jargon and verbal delicacy and continued in a cloud of _____ as _____ as language and literature, skillfully used, could make it.

- A. circumlocution . . literal
- B. cliché . . lucid
- C. euphemism . . impenetrable
- D. particularity . . deliberate
- E. subjectivity . . enthralling

4. While Parker is very outspoken on issues she cares about, she is not _____; she concedes the _____ of opposing arguments when they expose weaknesses in her own.

- A. fickle . . validity
- B. arrogant . . restraint
- C. fanatical . . strength
- D. congenial . . incompatibility
- E. unyielding . . speciousness

5. Usually the first to spot data that were inconsistent with other findings, in this particular experiment she let a number of _____ results slip by.

- A. inaccurate
- B. verifiable
- C. redundant
- D. salient
- E. anomalous

6. Cézanne's delicate watercolor sketches often served as _____ of a subject, a way of gathering fuller knowledge before the artist's final engagement of the subject in an oil painting.

- A. an abstraction
- B. an enchantment
- C. a synthesis
- D. a reconnaissance
- E. a transcription

7. Liberty is not easy, but far better to be an _____ fox, hungry and threatened on its hill, than a _____ canary, safe and secure in its cage.

- A. unfriendly . . fragile
- B. aging . . young
- C. angry . . content
- D. imperious . . lethargic
- E. unfettered . . well-fed

8. Johnson never _____ to ignore the standards of decent conduct mandated by company policy if _____ compliance with instructions from his superiors enabled him to do so, whatever the effects on his subordinates.

- A. deigned . . tacit
- B. attempted . . half-hearted
- C. intended . . direct
- D. scrupled . . literal
- E. wished . . feigned

Directions: In each of the following questions, a related pair of words or phrases is followed by five lettered pairs of words or phrases. Select the lettered pair that best expresses a relationship similar to that expressed in the original pair.

9. didactic : instruct ::

- A. pedantic : contend
- B. comic : amuse
- C. theatrical : applaud
- D. imperative : obey
- E. rhetorical : recite

10. garrulous : talkative ::

- A. suspicious : unreliable
- B. cantankerous : obtuse
- C. cloying : sweet
- D. reflective : insightful
- E. prudent : indecisive

11. digressive : statement ::

- A. connotative : definition
- B. slanderous : slur
- C. tangential : presupposition
- D. biased : opinion
- E. circuitous : route

12. chicanery : clever ::

- A. expertise : knowledgeable
- B. certainty : doubtful
- C. gullibility : skeptical
- D. machination : heedless
- E. tactlessness : truthful

13. pluck : quit ::

- A. verve : flinch
- B. gall : skimp
- C. pride : grovel
- D. charm : smile
- E. poise : waver

Directions: The passage below is followed by questions based on its content. After reading the passage, choose the best answer to each question. Answer all questions following the passage on the basis of what is stated or implied in that passage.

The historian Frederick J. Turner wrote in the 1890s that the agrarian discontent that had been developing steadily in the United States since about 1870 had been precipitated by the closing of the internal frontier—that is, the depletion of available new land needed for further expansion of the American farming system. Not only was Turner’s thesis influential at the time, it was later adapted and elaborated by other scholars, such as John D. Hicks in *The Populist Revolt* (1931). Actually, however, new lands were taken up for farming in the United States throughout and beyond the nineteenth century. In the 1890’s, when agrarian discontent had become most acute, 1,100,000 new farms were settled, which was 500,000 more than had been settled during the previous decade. After 1890, under the terms of the Homestead Act and its successors, more new land was taken up for farming than had been taken up for this purpose in the United States up until that time. It is true that a high proportion of the newly farmed land was suitable only for grazing and dry farming, but agricultural practices had become sufficiently advanced to make it possible to increase the profitability of farming by utilizing even these relatively barren lands.

The emphasis given by both scholars and statesmen to the presumed disappearance of the American frontier helped to obscure the great importance of changes in the conditions and consequences of international trade that occurred during the second half of the nineteenth century. In 1869 the Suez Canal was opened and the first transcontinental railroad in the United States was completed. An extensive network of telegraph and telephone communications was spun: Europe was connected by submarine cable with the United States in 1886 and with South America in 1874. By about 1870 improvements in agricultural technology made possible the full exploitation of areas that were most suitable for extensive farming on a mechanized basis. Huge tracts of land were being settled and farmed in Argentina, Australia, Canada, and in the American West, and these areas were joined with one another and with the countries of Europe into an interdependent market system. As a consequence, agrarian depressions no longer were local or national in scope, and they struck several nations whose internal frontiers had not vanished or were not about to vanish. Between the early 1870s and 1890s, the mounting agrarian discontent in America paralleled the almost uninterrupted decline in the prices of American agricultural products on foreign markets. Those staple-growing farmers in the United States who exhibited the greatest discontent were those who had become most dependent on foreign markets for sale of their products. Insofar as Americans had been deterred from taking up new land for farming, it was because market conditions had made this period a perilous time in which to do so.

14. According to the author, changes in the conditions of international trade resulted in an:
- A. underestimation of the amount of new land that was being farmed in the United States
 - B. underutilization of relatively small but rich plots of land
 - C. overexpansion of the world transportation network for shipping agricultural products
 - D. extension of agrarian depressions beyond national boundaries
 - E. emphasis on the importance of market forces in determining the process of agricultural products

15. The author implies that the change in that state of the American farmers morale during the latter part of the nineteenth century was traceable to the American farmer's increasing perception that the:

- A. costs of cultivating the land were prohibitive within the United States
- B. development of the first transcontinental railroad in the United States occurred at the expense of the American farmer
- C. American farming system was about to run out of the new farmland that was required for its expansion
- D. prices of American agricultural products were deteriorating especially rapidly on domestic markets
- E. proceeds from the sales of American agricultural products on foreign markets were unsatisfactory

16. According to the passage, which of the following occurred prior to 1890?

- A. Frederick J. Turner's thesis regarding the American frontier became influential
- B. The Homestead Act led to an increase in the amount of newly farmed land in the United States
- C. The manufacturers of technologically advanced agricultural machinery rapidly increased their marketing efforts
- D. Direct lines of communication were constructed between the United States and South America
- E. Technological advances made it fruitful to farm extensively on a mechanized basis

17. The author's argument implies that, compared to the yearly price changes that actually occurred on foreign agricultural markets during the 1880s, American farmers would have most preferred yearly price changes that were

- A. much smaller and in the same direction
- B. much smaller but in the opposite direction
- C. slightly smaller and in the same direction
- D. similar in size but in the opposite direction
- E. slightly greater and in the same direction

APPENDIX F
TEST EXPERIENCE SURVEY

Please rate how much you agree with the following statements.

I am concerned that the researcher will judge [African-Americans/European-Americans], as a whole, based on my performance on this test.

| | | | | | | |
|-------------------|---|---|---------|---|---|----------------|
| Strongly Disagree | | | Neutral | | | Strongly Agree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

The researcher will think that [African-Americans/European-Americans], as a whole, have less intellectual ability if I did not do well on this test.

| | | | | | | |
|-------------------|---|---|---------|---|---|----------------|
| Strongly Disagree | | | Neutral | | | Strongly Agree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

I believe the researcher will be able to provide feedback that will help me on future tests.

| | | | | | | |
|-------------------|---|---|---------|---|---|----------------|
| Strongly Disagree | | | Neutral | | | Strongly Agree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

LIST OF REFERENCES

- Allen, W. R. (1992). The color of success: African American college student outcomes at predominantly white and historically black public college and universities. *Harvard Educational Review, 64* (1), 26–44.
- Ambady, N., Paik, S. K., Steele, J., Owen-Smith, A., Mitchell, J. P. (2004). Deflecting negative self-relevant stereotype activation: The effects of individuation. *Journal of Experimental Psychology, 40*, 401–408.
- Ambady, N., Shih, M., Kim, A., and Pittinsky, T. L. (2001). Stereotype susceptibility in children: Effects of identity activation on quantitative performance. *Psychological Science, 12*, 385–390.
- Aronson, J. (2002). Stereotype threat: Contending and coping with unnerving expectations. In J. Aronson (Ed.), *Improving academic achievement: Impact of psychological factors on education* (pp. 279–301). New York, NY: Academic Press.
- Aronson, J., Fried, C. B., and Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology, 38*: 113–125.
- Aronson, J., Lustina, M. J., Good, C., Keough, K., Steele, C. M., & Brown, J. (1999). When white men can't do math: Necessary and sufficient factors in stereotype threat. *Journal of Experimental Social Psychology, 35*, 29–46.
- Aronson, J., Quinn, D. M., & Spencer, S. J. (1998). Stereotype threat and the academic underperformance of minorities and women. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective* (83-103).. New York, NY: Academic Press.
- Baddeley, A. (1996). Exploring the central executive. *The Quarterly Journal of Experimental Psychology, 49A* (1), 5–28.
- Ben-Zeev, T., Fein, S., & Inzlicht, M. (2005). Arousal and stereotype threat. *Journal of Experimental Social Psychology, 41*, 174–181.
- Blascovich, J., Spencer, S. J., Quinn, D., & Steele, C. M. (2001). African Americans and high blood pressure: The role of stereotype threat. *Psychological Science, 12*, 225–229.
- Brown, L. M., & Dobbins, H. (2004). Students' of color and European American students' stigma-relevant perceptions of university instructors. *Journal of Social Issues, 60*(1), 157–174.
- Cohen, G. L., & Garcia, J. (2005). "I am us": Negative stereotypes as collective threats. *Journal of Personality and Social Psychology, 89*(4), 566–582.
- Croizet, J., Després, G., Gauzins, M., Huguet, P., Leyens, J., & Méot, A. (2004). Stereotype

- threat undermines intellectual performance by triggering a disruptive mental load. *Personality and Social Psychology Bulletin*, 30(6), 721–731.
- Croizet, J., Désert, M., Dutrévis, M., & Leyens, J. (2001). Stereotype threat, social class, gender, and academic under-achievement: when our reputation catches up to us and takes over. *Social Psychology of Education*, 4, 295–310.
- Demo, D. H., & Parker, K. D. (1987). Academic achievement and self-esteem among African-American and White college students. *Journal of Social Psychology*, 127, 345–355.
- Educational Testing Service. (2003). *Sex, race, ethnicity, and performance on the GRE® General Test 2003-2004*. Retrieved March 1, 2005, from <http://ftp.ets.org/pub/gre/994950.pdf>
- Flowers, L. (2002). The impact of college racial composition on African American students' academic and social gains: Additional evidence. *Journal of College Student Development*, 43(3), 403–410.
- Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Applied Developmental Psychology*, 24, 645–662.
- Gonzales, P. M., Blanton, H., & Williams, K. J. (2002). The effects of stereotype threat and double-minority status on the test performance of Latino women. *Personality and Social Psychology Bulletin*, 28, 659–670.
- Herrnstein, R. J., & Murray, C. (1994). *The bell curve. Intelligence and class structure in American life*. New York, NY: Free Press.
- Hess, T. M., Auman, C., Colcombe, S. J., & Rahhal, T. A. (2003). The impact of stereotype threat on age differences in memory performance. *Journal of Gerontology*, 58, 3–11.
- Inzlicht, M., & Ben-Zeev, T. (2000). A threatening intellectual environment: Why women are susceptible to experience problem-solving deficits in the presence of men. *Psychological Science*, 11, 365–371.
- Jorna, P. (1992). Spectral analysis of heart rate and psychological state: A review of its validity as workload index. *Biological Psychology*, 34, 237–257.
- Keller, J., & Dauenheimer, D. (2003). Stereotype threat in the classroom: Dejection mediates the disrupting threat effect on women's math performance. *Personality and Social Psychology Bulletin*, 29, 371–381.
- Kozol, J. (1991). *Savage inequalities: Children in America's schools*. New York, NY: Harper Perennial.

- Kuncel, N. R., Crede, M. & Thomas, L. L. (2005). The validity of self-reported grade point averages, class ranks, and test scores: A meta-analysis and review of the literature. *Review of Educational Research*, 75, 63–82.
- Lockwood, P., & Kunda, Z. (2002). Motivation by positive or negative role models: Regulatory focus determines who will best inspire us. *Journal of Personality and Social Psychology*, 83(4), 854–864.
- Markus, H. R., & Kitayama, S. (1994). The cultural construction of self and emotion: implications for social behavior. In S. Kitayama & H. R. Markus (Eds.). *Emotion and culture: Empirical studies of mutual influence* (pp. 89–130). Washington, DC: American Psychological Association.
- Marx, D. M., & Roman, J. S. (2002). Female role models: Protecting women's math test performance. *Personality and Social Psychology Bulletin*, 28(9), 1183–1193.
- McKay, P. F., Doverspike, D., Bowen-Hilton, D., McKay, Q. D. (2003). The effects of demographic variables and stereotype threat on black/white differences in cognitive ability test performance. *Journal of Business and Psychology*, 18, 1–14.
- Nieto, S. (2004). *Affirming diversity: The sociopolitical context of multicultural education (4th edition)*. New York, NY: Longman Publishing Group.
- O'Brien, L. T., & Crandall, C. S. (2003). Stereotype threat and arousal: Effects on women's math performance. *Personality and Social Psychology Bulletin*, 29, 782–789.
- Ogbu, J. U. (1978). *Minority education and caste: The American system in cross-cultural perspective*. San Diego: Academic Press.
- Ogbu, J. U. (1987). Variability in minority school performance: A problem in search of an explanation. *Anthropology and Education Quarterly*, 18(4), 312–334.
- Osborne, J. W. (2001). Testing stereotype threat: Does anxiety explain race and sex differences in achievement? *Contemporary Educational Psychology*, 26, 291–310.
- Quinn, D. M., & Spencer, S. J. (2001). The interference of stereotype threat with women's generation of mathematical problem-solving strategies. *Journal of Social Issues*, 57, 55–71.
- Sathy, V., Barbuti, S., Mattern, K. (2006). *The new SAT © and trends in test performance*. Retrieved October 14, 2006, from College Board Web site: <http://www.collegeboard.com/research/abstract/150063.html>
- Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math performance. *Journal of Experimental Social Psychology*, 38, 194–201.

- Schmader, T., & Johns, M. (2003). Converging evidence that stereotype threat reduces working memory capacity. *Journal of Personality and Social Psychology*, *85*, 440–452.
- Sekaquaptewa, D., & Tompson, M. (2003). Solo status, stereotype threat and performance expectancies: Their effects on women's performance. *Journal of Experimental Social Psychology*, *39*, 68–74.
- Shih, M., Pittinsky, T. L., & Ambady, N. (1999). Stereotype susceptibility: Shifts in quantitative performance from sociocultural identification. *Psychological Science*, *10*, 81–84
- Smith, J. L. (2004). Understanding the process of stereotype threat: A review of mediational variables and new performance goal directions. *Educational Psychology Review*, *16* (3), 177–206).
- Smith, C. E., & Hopkins, R. (2004). Mitigating the impact of stereotypes on academic performance: The effects of cultural identity and attributions for success among African American college students. *The Western Journal of Black Studies*, (28)1, 312–321.
- Smith, J. L. & White, P. H. (2001). Development of the domain identification measure: a tool for investigating stereotype threat effects. *Educational and Psychological Measurement*, *61*, 1040–1057.
- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, *35*, 4–28.
- Spielberger, C. D., Gorsuch, R. L., and Lushene, R. E. (1970). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologist Press.
- Steele, C. M. (2004). A threat in the air: How stereotypes shape intellectual identity and performance. In J. Banks & C. Banks (Eds.), *Handbook of research on multicultural education (2nd edition)*(pp. 682–699). San Francisco, CA: Jossey-Bass.
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, *52*, 613–629.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, *69*, 797–811.
- Steele, C. M., & Aronson, J. (1998). Stereotype threat and the test performance of academically successful African Americans. In C. Jencks & M. Phillips (Eds.), *The black-white test score gap*. (pp. 401–427). Washington, D.C.: Brookings Institution Press.
- Stone, J., Lynch, C. I., Sjomeling, M., & Darley, J. M. (1999). Stereotype threat effects on black and white athletic performance. *Journal of Personality and Social Psychology*, *77*, 1213–1227.

- Stricker, L. J. (1998). *Inquiring about examinees' ethnicity and sex: Effects on AP Calculus AB Examination performance* (College Board Rep. No. 98-01; ETS RR 98-05). New York, NY: College Board.
- Stricker, L. J., & Ward, W. C. (1998). *Inquiring about examinees' ethnicity and sex: Effects on computerized placement tests performance* (College Board Rep. No 98-02; ETS RR 98-09). Princeton, NJ: Educational Testing Service.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.). *The psychology of intergroup relations* (pp. 7-24). Chicago: Nelson Hall.
- Taylor, E., & Antony, J. S. (2000). Stereotype threat reduction and wise schooling: Towards the successful socialization of African American doctoral students in education. *The Journal of Negro Education*, 69 (3), 184-198.
- Turner, M. L., & Engle, R. W. (1989). Is working memory task dependent? *Journal of Memory and Language*, 28, 127-154.
- Urduan, T. C., & Maehr, M. L. (1995). Beyond a two-goal theory of motivation and achievement: A case for social goals. *Review of Educational Research*, 65, 213-243.
- Walters, A. M., Lee, S., & Trapani, C. (2004). *Stereotype Threat, the Test-Center Environment, and Performance on the GRE General Test* (College Board Rep. No 01-03R; ETS RR-04-37). Princeton, NJ: Educational Testing Service.
- Walters, A., Shepperd, J. A., Brown, L. M. (2003). The effect of test administrator ethnicity on test performance. Unpublished manuscript, University of Florida.
- Wittenbrink, B., Judd, C. M., & Park, B. (1997). Evidence for racial prejudice at the implicit level and its relationship with questionnaire measures. *Journal of Personality and Social Psychology*, 72, 262-274.
- Worchel, S., & Coutant D. (2001). It takes two to tango: Relating group identity to individual identity within the framework of group development. In M. A. Hogg & R. S. Tindale (Eds.), *Blackwell handbook of social psychology: Group processes* (pp. 461-481). Malden, MA: Oxford Blackwell Publishing.
- Zirkel, S. (2002.) Is there a place for me? Role models and academic identity among white students and students of color. *Teachers College Record*, 104(2), 357-376.

BIOGRAPHICAL SKETCH

Rashida Williams Brown was born on December 19, 1979 in Miami, Florida. The youngest of three children, she grew up mostly in Miami, Florida, graduating from Miami Norland Senior High School in 1997. She earned her B.S. in psychology and her M. Ed. in school psychology from the University of Florida in 2001 and 2005, respectively. She earned a Ph.D. in School Psychology in 2007.